

عنوان مقاله:

The Construction and Comparison of Dye-Sensitized Solar Cells with Blackberry and NY19 Dyes

محل انتشار:

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خلاصه مقاله:

In a dye-sensitized solar cell (DSSC), the amount of light absorption depends on the design of the pigments, which determines the strength of light absorption and the optical range of the cell. In this paper, we have constructed and studied two fairly similar patterns of DSSCs in structure. The thickness of TiO_2 used for both cells is taken to be $2\mu m$. We have used an industrial NY19 dye for one of the cells and a natural blackberry dye for the other. The NY19 dye is the most common dye used in DSSCs. The results obtained from the I-V curve indicate a 700 mV open-circuit voltage (V_{oc}), an 8.5 mA short-circuit current (I_{sc}), a 70% fill factor (FF) and a 4.2% efficiency for the NY19 sample. Blackberry is a natural dye which has no toxic effects in comparison with the industrial samples. The results obtained from the blackberry cell experiment indicate a 770 mV V_{oc} , a 2.08 mA I_{sc} , a 70% FF and a 1.13% efficiency.

کلمات کلیدی:

Dye-Sensitized Solar Cell, Pigment, Natural Blackberry Dye, The NY19 Dye, Efficiency

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